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[Reprinted from THE PHILADELPHIA MEDICAL JOURNAL, February 18, 1899.]

JUDICIAL METHODS.—MEDICO-LEGAL TESTIMONY.—THE ZELNER CASE.

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PROBABLY every one who has mingled extensively with what may be called the upper middle classes in England and the Continent of Europe must have been impressed with the fact of their general belief that the greatest blot upon American civilization is the extraordinary number of homicides in the United States. That this feeling is well founded cannot be gainsaid. It is one of the evils of our system of government that the United States authorities of necessity take little interest in the question of crime, because criminal acts come under the jurisdiction of the individual States. Few of our individual State governments have reached that degree of civilization which makes a government take an intelligent, broad view of general questions; and so we have practically in the United States no official statistics in regard to homicides. The Chicago *Tribune* attempts to supply the deficiencies of government in this respect, and although it is not probable that the statistics which it gathers together are entirely accurate, they are the best we have, and are sufficiently near the truth to show the general drift of affairs.

According to these statistics, there were, in the 5 years ending with 1898, 48,312 homicides in this country, an average of a little under 10,000 a year. It may well be that there is some duplication in the gathering of the statistics by the *Tribune*, but it is certain that there are many murders which never come to the

knowledge of the *Tribune* statistician, so that it is probable that 10,000 is not above the annual number of murders in the country.

Hangings being comparatively few, and a matter of official record, the statistics given by the *Tribune* are probably nearly accurate. There were, according to these statistics, 623 hangings in the 5 years; in other words, the executions in these 5 years amounted to a little over 1% of the total number of homicides of all grades.

The causes for the enormous annual slaughter amongst us are various, but that one of the efficient causes is the failure of our juridical system seems to me beyond cavil. Probably three-fourths of murderers go unpunished, and each man who plans murder or kills without premeditation hopes to be one of the great majority that escape the consequences of their acts.

The legal machinery provided by the law for the conviction of the murderer is composed of a district attorney or prosecuting legal officer, a grand jury, a petit jury, and judges, besides detectives, expert witnesses, etc. It is apparent that for the proof of the murder and the determination of the causes of death medical testimony is essential, and that, whatever may be the faults of medical testimony as given in the United States, the processes of the law cannot be carried out without it. It has become fashionable to abuse the medical expert, and, indeed, the whole medical profession, on account of expert testimony given in our courts. There is undoubtedly great reason for complaint, but the abuse should be directed not toward the medical profession but toward the present system of trial and the legal and legislative professions that have made it what it is. The medical profession in the United States comprises within its ranks every kind of man, from the criminal to the individual of highest

character, from the semi-imbecile to the man of extraordinary intellectual power. It probably does not differ essentially in its personnel from the average educated classes of the whole community, but in so far as it does differ it is distinctly superior rather than inferior, the whole tendency of medical education and the stimulating force of medical *esprit de corps* being toward the elevation of the character of the individual. The existing scheme or plan of expert testimony, which is the outgrowth of legislation and not of any acts of the medical profession, either in its solidarity or its individuality, puts the greatest possible pressure upon the individual doctor to give inaccurate testimony, and affords the greatest possible latitude to the defendant, through his lawyers, to hunt up the ignorant and pliable and to avail himself of individual idiosyncrasies or dishonesties. From doctor to doctor, with a large fee in hand, the counsel goes, until at last a man is found who is willing to give the opinion that is wished. Of course, a fee is paid for an opinion rendered, whether that opinion be favorable or unfavorable to the desires of the lawyer, and by the acceptance of the fee the mouth of the physician consulted is absolutely sealed; so that the public never knows that the lawyer has consulted, it may be, a dozen doctors and received a dozen adverse reports before he has found one opinion that has suited his purpose, or one man who will bend to the lust of gold. Under these circumstances the question offers itself to every self-respecting member of the profession—"Shall or shall I not allow myself to be called into court?" As, however, the expert is an absolute necessity, and as the refusal of the honest and capable would leave the field even more open than it is at present to the dishonest and incapable, I cannot see that members of the profession are justified in refusing to testify concerning subjects within

their immediate knowledge. There should be some way, however, by which the courts should make more distinction than they do at present between the true and the false experts. How honesty is to be probed it is difficult to say; but would it not be possible to have men licensed to practise as experts in the courts after examination, precisely as men are licensed before the courts to practise at the bar?

While, however, allowing the evils of expert testimony in criminal trials, I want to assert my opinion that it is no worse than the other features of our present system. I heard it once said in a public assembly, by one of Philadelphia's most famous lawyers, quoting the words of a famous English jurist, that there was no greater mistake than the supposition that the jury-system was conceived for the purpose of doing justice; that it was after all only a system, which by replacing the ordeal of battle should prevent men from flying at one another's throats, and which should also in a measure protect the rights of individuals against those in superior stations.

On the face of it there can be nothing more absurd than the leaving of questions of sanity, or of chemistry or other abstruse sciences, to 12 unlearned men. The constitution of the jury must be an embodiment of the prejudices of the community out of which it is formed. In a frontier settlement, where public opinion justifies the shooting of a man who has insulted the shooter, a jury can hardly be expected to convict one who murders upon what public opinion believes to be sufficient provocation. We have heard it stated by eminent counsel that in the State of Pennsylvania no man has ever been executed for even the most deliberately planned and premeditated murder of a man who has invaded his household-circle. I have known a man arm himself, travel some hundreds of miles to

kill an individual such as just alluded to, and the jury acquit on the ground of instantaneous insanity. For less justifiable and often extremely recondite motives the deciding 12 sometimes reach conclusions most illogical. In the Meyer case, not long since tried in New York City, a conspiracy was entered into in Chicago to defraud life-insurance companies. It involved impersonation and taking out of policies in Chicago, the subsequent hiring of a flat in New York City, and the daily administration of poisonous doses, first of tartar emetic, afterward of arsenic, for some weeks, and when death resulted the attempt to secure the insurance-moneys. Yet the jury brought in a verdict of unpremeditated murder. But it would be an endless task to cite individual cases of unwarranted verdicts given by juries. While this article has been in proof the daily press has discussed several verdicts, which, according to the press itself, were wilful departures from the right.

Perhaps an even more serious obstacle to justice than the ignorance, the illogical mentality, and the prejudices of jurors, is the so-called process of "fixing the jury." That this exists in this city (Philadelphia) I have heard asserted by authorities who were most experienced in the practice of our criminal courts; and the recent introduction and passage by the State Senate of an Act which it is affirmed in the daily press and upon the floor of the Legislature is practically to render "fixing" of a jury less difficult, has led to public assertions by responsible men. Thus State Senator Weller, as reported in the Philadelphia *Public Ledger*, said:

"Too often attempts are made by abhorrent means to fix the jurors or influence them in behalf of the accused, especially in our large cities. The inducements to work in behalf of the person charged are often very potent. In our large cities there exist regularly arranged fraternities of professional jury fixers, bound together by secret oath, whose

exertions are always put forth in behalf of the defendant, from whom, or his friends, they get their means of livelihood."

We are so accustomed to the position in which the law places the judge in a murder-case that its anomalous character fails to be perceived. Probably as a long-continuing result of the bloody assizes of England (when at the order of judges English blood flowed like water) if the life of a prisoner is imperiled, the law and the custom, which is almost more constraining than law, practically instructs the judge to favor the accused in his rulings—instructions which are often fortified by the enforced absence of the murdered person and the presence of the alleged murderer, especially if it so be that the latter be a female of prepossessing appearance. Under these circumstances the law further proceeds to make the decisions of the judge that are against the prisoner open to revision by the superior court, but declares that the decisions that are in favor of the prisoner shall be final; so that, however outrageous they may be, they cannot be revoked by any superior tribunal. The law puts it in the power of a single judge, through ignorance or prejudice, or worse motive, practically to free the prisoner; and holds the judge responsible only to a public opinion, which is usually paying no attention to the matter. The Zelner case, recently tried in Philadelphia, shows that the possession of this power by the judges is not merely a dead theory, but a living, active factor of our criminal juridical system; since, in that case, the presiding judge assumed the whole responsibility, practically taking the decision out of the hands of the jury and setting free the accused.

When it is remembered that the extraordinary opportunities offered for the defendant by the jury trial are to be taken advantage of by men of the highest mental

acumen and technical skill, who with single eye struggle in the criminal courts for the purpose of acquitting prisoners, it seems a wonder that every criminal does not escape through the various openings, and that the convictions are so frequent as they are.

So far, then, as concerns expert testimony in our courts, I desire to make the claim that it is only part and parcel of a juridical system which has been developed under circumstances essentially different from those now existing, and that with all its faults it is neither better nor worse than other similarly integrant portions of that system, and that its serious reformation or change is probably impossible without a change in the whole method of trial; to drop it out of the jury trial would be simply to make the latter more of a farce than it is at present. It is interesting to note that at least one State has begun to break away from that archaic fetichism which has so long led Anglo-Saxon legal and legislative minds to worship the jury-system, and that in Maryland a murderer may be tried at his own option by a bench of judges instead of by a jury. The writer had the privilege to act in one such trial as expert, and the revolution in the manners and methods of the court-room were a revelation; no contention of what was or was not evidence, no attempt to introduce material to bewilder the juror, no speeches to inflame prejudice or soften the sympathies; nothing but a straightforward common-sense procedure, which in a single day finished very satisfactorily a difficult case that under the older methods would have involved the court for nearly a week and ended in a verdict the character of which no man could predict.

Under existing circumstances judicial decisions that are unusual become a matter of public interest, and especially of interest to the medical profession when they are connected with the giving of expert testimony.

Further, the only check that there is upon the medical expert, over and beyond the control of his individual conscience, is his feeling of responsibility to the general medical profession.

It is evident that if medical testimony reaches not beyond the confines of the court-room, the feeling of responsibility to the profession on the part of the giver holds no sway; and therefore when medical testimony is unusual it is a matter of public interest that it be known to the general profession.

It is over 30 years since I was engaged as expert in my first case of alleged poisoning, the notorious Schoeppe case, in which I had the pleasure of hearing the medical expert say that "the woman must have died of compound poisoning, because he had taken from a drug-store a little of every poison which was in it and given it to a hawk, which died with the same symptoms the woman had shown." During the whole of this long experience there has been no trial in which statements of the experts and the methods of the court have seemed more worthy of record than in the Zelner case, recently tried in Philadelphia. With this much of apology I shall proceed to give a succinct account of this case, using an official copy of the stenographic notes as the basis of the article.

Case.—According to the testimony of his friend and long-time physician, Dr. Wm. A. Burns, Mr. Zelner was a man of about 60 years of age, very robust and free from history of past illness. He was taken sick suddenly in the night of April 12, 1897. The chief evidence concerning his illness was that of police-officer John H. Hoffman, who stated that Mrs. Zelner came to him about 5 o'clock in the morning, on the street, saying that Mr. Zelner "had a stroke;" that he then went into Mr. Zelner's room, and that Mr. Zelner appeared to be in great agony, saying:

"'I have got cramp in my legs.' We took the covers off him and we rubbed his legs for quite a while. He kept crying 'Whoo, whoo, my, whoo, whoo, my,' just about that way.

"Q. Convulsive and rigid?

"A. Yes. He said, 'I think I am dying.' I said, 'No, Reub, you are not dying; you have got cramps, I suppose.' 'Whoo, whoo,' he says, 'such pains.' I said to his wife, who came upstairs, 'Go and get some hot cloths; probably that will relieve him.' She brought the cloths up. We laid them on his legs, and he says, 'Whoo, I think I am dying.' I said, 'No, you are not dying; you are frightened, that is all; you have got great pain.' We put these cloths on, and while we were at it he turned his head over towards the right, towards Eleventh Street, and he says, 'Dying'; he straightened out and was dead. [Witness here threw his head upwards and backwards, imitating actions of a man who dies in a tetanic spasm.]"

Cross-examination of Mr. Hoffman failed to elicit anything of importance, unless it was that he had not observed lividity of the face, risus sardonicus, and certain other of the minute symptoms usually present in strychnia poisoning. The time of observation was very short; to use the words of the witness, "He [Mr. Zelner] did not live long enough after I got there to complain of much."

Dr. Henry W. Cattell, coroner's physician, testified that he had made two autopsies on the body of Reuben Zelner, one before and one after burial, and had found no cause of death; some congestion of the brain and a little increase of the cerebral fluids being, however, noted; that the body was that of a man weighing about 150 lbs., and that he (Dr. Cattell) had taken about 20 lbs. of the soft tissues and put them in the hands of the chemists, being careful to choose a great variety of places from which to select portions so as to have samples of the whole body. He selected the stomach, a portion of the intestines, a portion of the liver, one kidney, a large piece from the muscles of the region of the thighs, another piece from the muscles of the shoulders and the arm, and a portion

of the brain; the whole representing one-sixth of the weight of the soft parts, calculating the bones at 30 lbs.

The chemical examinations for the Commonwealth of the portions of the body selected by Dr. Cattell were made independently of each other, by Dr. John Marshall, Professor of Chemistry in the Department of Medicine of the University of Pennsylvania, and by Mr. William C. Robinson, Jr., Chemist to the Philadelphia Board of Health. At the time the chemical examination was being made Dr. Marshall was in entire ignorance of Mr. Robinson having been engaged to make a chemical examination, and likewise Mr. Robinson was in entire ignorance of Dr. Marshall having been engaged to make an examination.

Dr. Marshall produced in Court the strychnine that he had obtained in the body, saying of it (page 148):

"I am satisfied that the substance which I have here, and which I have tested, is strychnine and nothing else."

The evidences relied upon by the chemists as proof that the substance finally obtained from the material submitted for examination was strychnine were as follows:

DR. MARSHALL'S CONCLUSIONS:

(1) The crystalline form of the colorless residue.
(2) The intensely bitter taste.
(3) The response to the color-test with sulphuric acid and potassium bichromate.
(4) The physiologic test, *i.e.*, the production of spasmodic muscular contractions after the injection of a dilute aqueous solution of the residue into the backs of frogs.

MR. ROBINSON'S CONCLUSIONS.

(1) The crystalline form of the colorless residue.
(2) The intensely bitter taste of the residue.
(3) The response to the color-test with sulphuric acid and potassium bichromate.
(4) The production of characteristic crystals of strychnine chromate upon the addition of potassium chromate to a solution of the crystalline residue obtained from the material examined.

The amount of tissue operated upon by Dr. Marshall was about 2 lbs. of liver, 6 lbs. of muscle, 5 lbs. of intestines, and $1\frac{1}{2}$ lbs. of brain. These tissues were examined separately, and from the liver was recovered strychnine equivalent to 0.0217 grain strychnine sulphate; from the muscle, strychnine equivalent to 0.0079 grain strychnine sulphate, equivalent in the aggregate to 0.0296, equal to $\frac{1}{34}$ grain strychnine sulphate; from the intestines, strychnine equivalent to 0.0236 grain strychnine sulphate which, added to the 0.0296 grain strychnine sulphate of the liver and muscle, would equal 0.0532 grain strychnine sulphate, or $\frac{1}{18}$ grain strychnine sulphate. The quantity of strychnine recovered from the brain was insufficient to be weighed, but was quite sufficient in quantity to permit of the application of the tests as to taste, the color-test with sulphuric acid and potassium bichromate, and also the physiologic test.

Mr. Robinson recovered from the contents of the stomach 0.23 grain strychnine, equivalent to 0.2947 grain strychnine sulphate, or $\frac{1}{4}$ grain strychnine sulphate. From portions of the kidney, liver, and brain, which were examined together, Mr. Robinson recovered strychnine equivalent to 0.1067 grain strychnine sulphate, and from the muscle, strychnine equivalent to 0.1153 grain strychnine sulphate, a total of 0.222 grain strychnine sulphate, or $\frac{1}{5}$ grain strychnine sulphate.

Considering only the alkaloid that was absorbed, namely, that recovered from portions of the liver, muscle, kidney, and brain, by Dr. Marshall and Mr. Robinson, there was recovered 0.0296 grain plus 0.0222 grain strychnine sulphate, or in the aggregate $\frac{1}{4}$ grain strychnine sulphate. This, then, was the amount of absorbed alkaloid calculated as strychnine sulphate recovered from the twenty wounds of tissues examined by the chemists. The quantity of unabsorbed alkaloid recovered from the intestines was equivalent to 0.0236 grain strychnine sul-

phate, and from the contents of the stomach was equivalent to 0.2947 grain strychnine sulphate, making the quantity of unabsorbed alkaloid recovered equivalent to 0.3479 grain strychnine sulphate.

After the conclusion of the other expert testimony I was put upon the stand. In answer to the direct question, I said (page 209):

"My opinion is that the death (Reuben Zelner) was due to strychnine-poisoning. The cause of death was strychnia."

In answer to another question, I said (pp. 209–210):

"The minimum toxic dose of strychnia that has taken life in the adult is from $\frac{1}{3}$ to $\frac{1}{2}$ grain. According to the testimony here given, $\frac{1}{2}$ grain of strychnia was obtained from the body of the deceased, and was obtained from only a portion of the soft tissues, which were so scattered and so selected that it is a practical certainty that only a portion of the strychnia that was in the body was obtained by the chemists. So that there was present, without doubt, more than the minimum fatal dose of strychnia in the body of Mr. Zelner."

Also, in regard to the cumulative effect of strychnia, (page 210):

"My experience is that no evidence of the accumulation of strychnia can ever be obtained. On the other hand, it usually loses its influence, so that when used continuously with good effect, we have to give it in ascending or slightly increasing doses. There are some authorities, especially some of the Germans, who believe that strychnia accumulates. As the result of very wide study and enormous experience and much reading, I do not believe that this occurs."

Further, in reply to questions asked, I stated with details the differences between the symptoms of tyrotoxicon-poisoning and those of strychnia-poisoning, and in answer to the following direct question gave the appended answer:

Page 212. (Official stenographic report.)

"Q. Referring you again to the symptoms as described by Sergeant Hoffman, to the actual finding of a toxical dose of strychnine in this body, and to the negative results of the

post-mortem examination, can you say that death was due here to strychnia-poisoning, and exclude tetanus and tyrotoxicon?

"A. I don't think the symptoms resemble tyrotoxicon-poisoning; not according to all experience does it resemble it at all. When the question comes between tetanus and strychnia-poisoning, the symptoms are more consistent with those of ordinary strychnia-poisoning than they are with tetanus-poisoning, in their greater abruptness and greater rapidity. There are no post-mortem lesions, either for strychnia or in tetanus, which are characteristic, leaving out, of course, the question of the cultivation of the fluids and the finding of the bacillus. As the symptoms were consistent with those of strychnia-poisoning, and more consistent with those of strychnia-poisoning than any other disease, as tetanus, and as the post-mortem lesions were consistent with strychnia-poisoning, and as a fatal amount of strychnia, or a sufficient amount to cause death, was found in the body of the deceased, I can't get away from the conviction that the case was one of strychnia-poisoning."

With the guilt or innocence of the prisoner at the bar the expert has really nothing to do, and so I shall say in this article nothing whatever concerning the testimony given at the trial for the purpose of connecting the prisoner with the alleged poisoning. Probably no case of strychnia-poisoning in the world's medico-legal annals has been better demonstrated than in the present instance. Dr. Marshall produced in the court-room, in several glass dishes, a quantity of crystalline strychnine, equivalent to $\frac{1}{18}$ grain of strychnine-sulphate. If our legal methods of trial were constructed for the purpose simply of finding out the truth in accordance with the dictates of common sense, these crystalline residues would have been referred to a third chemist, who in the presence of the chemists of the prosecution and the defence would have either confirmed or overthrown the statement that these residues were pure strychnine. Under the ægis of the law, however, very properly from their point of view, the counsels of the defendant proceeded to refer the testimony and not the residues to experts, or persons willing to

appear as experts. Dr. Hobart A. Hare was consulted by the attorneys for the defence, but gave the positive opinion that the case was one of strychnine-poisoning and consequently he was not called upon to testify. Of the experts who were willing to appear upon the stand, Dr. George H. Meeker, Professor of Chemistry in the Medico-Chirurgical College, impugned the testimony of the chemists; while Dr. J. V. Shoemaker attacked that of the medical expert. The testimony of these gentlemen is, of course, too long to be quoted in a journal article, and under the circumstances a prolonged analysis of the testimony is hardly called for. Dr. Meeker said of the alkaloidal residues that Dr. Marshall and Mr. Robinson had sworn to be pure strychnine (Official Testimony, pp. 381-382):

"I say that it is not a justified conclusion to say that it is all strychnine. I will go further in that and say that it is *not a necessary conclusion that there is any strychnine there at all.* My reason for saying that is this: Alkaloids are divided according to their genesis—the sources from which they are obtained—conveniently into two classes, termed the vegeto-alkaloids and the animal alkaloids. Among the vegetable alkaloids, of which strychnine of course is one, being obtained from the Strychnos nux vomica—among these vegetable alkaloids there is one alkaloid, which, according to some authorities gives the same tests as strychnine. This alkaloid is the alkaloid aspidospermine."

Later in his cross-examination Dr. Meeker named pellagrosine as an animal alkaloid (ptomains) that gave the strychnine color-reactions.

Dr. Meeker went still further than this in his testimony at least giving the impression that there are no known tests to distinguish quinine in such an alkaloidal residue as was obtained by Dr. Marshall and Mr. Robinson.

He said, see O. T., p. 405, in answer to a question from the district attorney:

"A. To discover in this alkaloidal residue that it was partly composed of quinine. I can't outline any satisfactory test.

"Q. You cannot?
"A. I cannot.

P. 406:

"Q. Before passing away from the present point of inquiry, I want you to tell me 'yes,' or 'no,' whether there are tests by which the presence or absence of quinine can be disclosed to the chemist. I want an answer 'yes' or 'no.'
"A. I can't answer differently from what I did before."

The examination of Dr. Shoemaker, through no fault at all of his, was proceeded with in a manner that, if it be imitated, must in itself destroy the value of expert testimony in any case. The opinion of Dr. Shoemaker that the case was not made out to be one of strychnine-poisoning, appeared, according to his own statements on the stand, to be based upon the consideration of the whole testimony; for in answer to the question of the district attorney, he said (pp. 612–613):

"Q. Are you aware that it has been testified that $\frac{2}{100}$ of a grain of strychnine was found in the stomach of this man?
A. I read that testimony, and then I read what Dr. Meeker said, or rather I heard Dr. Meeker take into question the accuracy of this test and the accuracy of the other tests. In fact, I observed him making this demonstration, pointing out that possibly there might be some quinine in combination with the strychnine.
"Q. Is that what affects your judgment?
"A. Is that what affects my judgment?
"Q. Yes. In what way? Do you first assume to pass upon the two kinds of testimony and determine which is right and which is wrong, and then formulate your opinion based upon the result?
"A. I am not formulating an opinion."

Further, in another place (p. 617), Dr. Shoemaker said in reply to a question by the district attorney:

"Q. I am asking you one point at a time. What influence upon your judgment would the finding in the stomach of $\frac{2}{100}$ of a grain of strychnia have?
"A. I would want to be certain that strychnia was found.
"Q. But when you come here to testify upon this question you must assume that the evidence you have read is true.
"A. But I don't assume that."

It is plain that when there is conflict of chemical testimony if the expert gives medical testimony upon the whole case he must take upon himself the function of the jury, because he must assume, as the basis of his opinion, that one set of alleged facts is true and the other false—that one chemist is right and the other wrong. It is further evident that so long as this is allowed in the courts there can never be anything but confusion. Dr. X, in a case like the present, will assume that the chemist who said there is strychnine present was correct; he will conclude that the death was due to strychnine. Dr. Y will assume that what the chemist who denied the existence of strychnine said is true; to him the death was not by poisoning. So soon as there are antagonistic assertions and denials of alleged facts the expert opinions should evidently be given upon at least two hypothetical questions, one question being framed in accordance with one alleged set of facts of the case, the other in accordance with the other allegations. Which of the contradictory statements as to facts is proved by the testimony to be true it certainly is the province of the jury, not of the expert, to determine; and the application to the case in hand of the opinion of the expert should stand or fall as the jury finds the hypothetical question is or is not in accord with what it believes to be the facts of the case. The opinion of the expert should always be correct, but may or may not be applicable to the case.

Besides the main question of whether or not Mr. Zelner's death was due to strychnine, Dr. Shoemaker was called to prove that a man might be taking strychnine in ordinary therapeutic doses when suddenly toxic and even fatal symptoms might occur. On this point he said (Examination in Chief, p. 609):

"A. I believe that strychnia is very slowly eliminated from the body. As to whether it is destroyed within, I am

unable to say. My impression is it is stored up, and often it will burst suddenly upon the system and give rise to this toxic effect."

In his cross-examination he said (p. 621):

"Q. Have you had a case of fatal poisoning from the accumulation of strychnine administered medicinally?

"A. I have not, sir. I know of a man ——

(Objected to).

"Q. (Question repeated).

"A. I have said I have not, but I have seen the toxic action of strychnine from what, in my experience and belief, was its cumulative effect in the system.

"Q. It didn't cause death?

"A. It didn't cause death, but probably it might have caused death.

In cross-examination the district attorney attempted, among other things, to make Dr. Shoemaker acknowledge that the finding of $\frac{1}{4}$ grain of strychnine in the stomach would show that more than the medicinal dose of strychnine had been recently taken by the subject. His success is indicated by the following excerpts from the official record, page 625:

"Q. I want to know, sir, whether the fact that strychnia was found in the stomach here wouldn't indicate to you, as a reasonable man and as a physician, that strychnia had been recently administered, and only a portion of it had been absorbed into the system. Isn't that so?

"A. Wouldn't I assume? Under no circumstances.

"Q. Wouldn't it indicate that to your mind?

"A. That would depend upon the surrounding circumstances, sir, and the condition of the patient."

Page 626:

"Q. Wouldn't that be the natural thought that would come from such a condition as that?

"A. It would be if I had prejudged the condition and wanted to come to the conclusion you want me to come to.

"Q. Wouldn't it be the fact, unless there was some exceptional circumstances existing?

"A. Why should there be some exceptional circumstances existing?

"Q. Answer my question first. Wouldn't that be the fact, unless there were some exceptional circumstances existing?

"A. I should want to take into consideration the whole condition before I would agree with you on that point.

"Q. What would you require to take into consideration in order to answer that simple question?

"A. I would want to know if this patient had been upon strychnine, who had been administering, whether he had been taking strychnine himself, and the quantity of strychnine he had been taking."

Page 627:

"Q. Wouldn't the finding of $\frac{2}{100}\frac{3}{0}$ grain in the stomach, not taken into the system, indicate to you that more than a medicinal dose had been administered to that man?

"A. It would not, because as much as that has been administered to some individuals."

The next point in the district attorney's inquiry was an attempt on his part to have Dr. Shoemaker trace the distribution of poison through the system by the circulation after the absorption of the poison. As this piece of testimony seems to me worthy to rank among the curiosities of medico-legal literature I give it in full.

DR. SHOEMAKER'S TESTIMONY.

Page 631:

"Q. When the blood goes charged with its load to be carried through the system from the digestive organs, where does it carry it first?

"A. Carried it through the system by the circulation.

"Q. The system is the whole body. I ask you what part does it carry it to first, if you know. If you don't know, say so frankly.

"A. If I don't know?

"Q. You don't know.

"A. You wanted me to say I didn't. I told you it was returned to the heart and then distributed by the circulation.

"Q. Where?

"A. It is taken up by the lymphatics and lacteals, and it is distributed and carried into the circulation, and carried to the different parts of the body. I don't assume it goes to one particular spot, and neither do you.

"Q. Can't you tell where it goes first?

"A. I don't assume where it goes first.

"Q. Do you know?

"A. I have told you what I know.

"Q. Answer me directly. Do you know where it goes to first?

"A. I told you it came back to the heart and from the heart, and from the heart it is distributed to the different organs.

"Q. Comes from where to the heart?

Page 632 :

"A. It is taken up by the lacteals and lymphatics and carried into the circulation, and from the circulation it is distributed into the different organs.

"Q. You can't tell me, then, where it goes to first, in the course of circulation?

"A. I tried to tell you.

"Q. No; you simply gave me the general system. You said 'It goes back to the heart.' Of course it goes back to the heart, and it comes back from the heart.

"A. When does it reach the stomach by the circulation?

"Q. From the heart to the stomach, how many points does it pass?

"A. It reaches the stomach by the circulation.

"Q. I ask you how it does that?

"A. It is distributed by the cœliac plexus. It is back of the stomach; supplies the stomach. I'll tell you, if you want to know.

"Q. What vein is it that feeds the liver?

"A. The portal vein.

"Q. Where does it come from?

"A. It is given off the vena cava.

"Q. Where?

"A. From the vena cava.

"Q. That is what?

"A. That is a part of the portal circulation; part of the veins.

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"Q. What is that?

"A. I told you it was given off the vena cava. That is part of the portal circulation.

"Q. Won't you describe in plain English what that is, so that a layman can understand it?

"A. In the first place, we have what is called the arterial circulation. Then we have what is called the venous circulation, and from the venous circulation we have the distribution of the blood through the veins, and from the venous circulation we have the portal vein going to the liver.

"Q. You cannot tell, then, whether there is an even distribution through the body or not?

"A. Can you tell me?

"Q. I am not an expert like you, Doctor, and a great man.

"A. Well, you want to put an answer in my mouth.

"Q. I will ask you this question. Can you or can you not tell whether there is an even distribution through the circulation, of strychnine poison?

"A. I wouldn't undertake to say."

So far as the question of whether the death of Mr. Zelner was due to strychnine or not, when the defence rested its case, the situation was, that the prosecution claimed to have proven by its witnesses, (1) that there was in the body of Mr. Zelner more than a fatal dose of strychnine: $\frac{1}{4}$ grain of strychnine (calculated as sulphate) in the stomach: $\frac{1}{4}$ grain in one-fifth of the soft tissues; (2) that the death had been sudden, with symptoms that were consistent with strychnine-poisoning, without cause having been found at the autopsy; (3) that the death was due to strychnine; whilst the defence, through its experts, claimed that the substance produced in court as strychnine by the chemists was not proved by them to be strychnine, but might be a mixture of quinine and strychnine, or even contain no strychnine whatever, being simply aspidospermine or an animal alkaloid, because these substances would respond like strychnine to the tests relied upon by the Commonwealth's chemists, and that there was no proof that the death of Mr. Zelner was caused by strychnine.

In rebuttal the district attorney attempted to show by Dr. Marshall, (1) that it was possible to recognize quinine if it had been present in the alleged strychnine, and that it was not present; (2) that the statement of Dr. Meeker that aspidospermine gives reactions like those of strychnine is not correct; Dr. Marshall had the aspidospermine in court, and proposed to demonstrate the difference before the court and the jury. It is somewhat questionable whether such demonstration ought to be allowed in a court of justice, but as Dr. Meeker had been permitted to demonstrate that the color-reaction would occur in a mixture of strychnine and quinine as well as with pure strychnine no objection would seem to hold against a counter-demonstration by Dr. Marshall; in fact, no objection was made to such demonstration because the court refused to allow the rebuttal testi-

mony before the district attorney had gone that far with Dr. Marshall. Whether the district attorney could or could not have gotten his rebutting testimony in evidence by putting it in some different form I am not lawyer enough to know; but evidently he thought the attempt useless, because he made no further effort. The following excerpt is from the official record:

Examination in rebuttal of Dr. Marshall by the district attorney.

Pages 643, 644:

"Q. You have been sworn and testified at length in this matter. I want to direct your attention to one or two particular points. Mr. Meeker was examined, and gave some illustrations which were intended to show that quinine might be present in these tests which you made with the alkaloidal residue that was pronounced by you to be strychnine, and that in that way the question of the weight which you had given would be attacked. What have you to say as to the presence of quinine in the alkaloidal residue.

"(Objected to by Mr. Stevenson.)

"Mr. Graham. I propose to show that there was no quinine in the alkaloidal residue. I propose now, in the interests of truth and justice, to show before this jury by a test that there was no quinine in that residue. That removes the criticism absolutely, and it is in reply to the criticism made by Mr. Meeker.

"(Objection sustained.)

"Q. Have you any knowledge of aspidospermine?

"A. I have.

"Q. Was there any of this alkaloid in the residue which you found?

"(Objected to by Mr. Stevenson. Objection sustained.)

"(No cross-examination.)"

The allegations — that quinine when mixed with strychnine can not be recognized in an alkaloidal residue; that strychnine is liable to accumulate in the stomach or system and produce a sudden fatal outburst of symptoms; that aspidospermine gives the same color-reaction with sulphuric acid and potassium bichromate as strychnine; that the portal vein arises out of the vena cava—are equally correct, none of them being true; nevertheless, rebuttal was not permitted.

It must be evident to every thinking expert that if the method of procedure and rulings that were followed in this case are to be followed in the future in the Philadelphia courts, it will be impossible, except under the rarest circumstances, to give that demonstration of death by poisoning which should be the basis of conviction for murder by poisons. It will always be possible for defending lawyers to find some one who, through ignorance, inadvertence, love of lucre, or other reason, will deny the simplest facts of toxicologic science. As stated by the district attorney in the course of the case, the law does not allow the contradiction of such statements by books; if, therefore, it be not allowable to rebut such allegations as those given in the present case, how is the truth to be made out? It is impossible for any chemist in the primary evidence to foresee and guard against all lines of attack by incorrect statements to be made by the defence. If the validity of the tests relied upon by the chemist for the recognition of a certain alkaloid is called in question by the defence, which asserts that another alkaloid will respond to the same test, the Commonwealth must have the right to show that this is incorrect, or the truth cannot be established.

The present difficulties surrounding medical expert testimony are great, but if the alternately loose and strict rulings given in the Zelner case are to be the pattern for the future, these difficulties have to my thinking become insuperable and another long step has been taken to the *reductio ad absurdum* of trial by jury.